

Aviation News

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New Weapon Tested: First published photo of the NACA-developed guided missile being test-fired at the Committee's auxiliary flight test station. Initial power comes from six rocket motors in the tail fin assembly which drops off after the rockets exhaust their power. Still classified are its range and performance details. Story on Page 8. (NACA photo)

Lockheed-Convair Merger Would Create Aero Giant

Biggest industry fusion seen providing full line from Little Dipper to XB-36.....Page 7

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Boundary Layer Control Advances Plane Efficiency

Douglas engineers attack transport-design drag; supersonic problems NACA target.....Page 18

Challenges CAB On 'Grandfather' Clause Certificate

St. Louis fixed-baser to carry fight to courts if Board denies request.....Page 27



warrior born of battle

...the Curtiss BT-2C carrier based torpedo-bomber

Curtiss-Wright has drawn on the battle experience of its most fighting aircraft in designing this new and powerful torpedo-bomber.

Now being flown by U. S. Navy pilots in an extensive test program, airplanes of the BT-2C type incorporate major improvements on the best features of wartime carrier-based aircraft. Designed and built at the Curtiss-Wright Columbus, Ohio, plant which turned out more than 2,000 Hallibirds for

bombard for the Navy, this new plane combines high performance with extreme flexibility of usage for combat service.

A Wright Cyclone R-3350 engine with two-speed supercharger supplies more than 2100 horsepower and the plane carries either a torpedo or a variety of heavy bombs or large aerial rockets. Fully loaded it weighs over 18,000 pounds, has a range of nearly 1800 miles and a speed 150 miles greater than planes of similar type which saw war service.

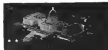


FIRST IN LIGHT
CURTISS
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Aviation Division
COLUMBUS, OHIO

Developing Flight in
Meet the Future.

THE AVIATION NEWS

Washington Observer



MEAD COMMITTEE SLUMPS—Senate War Investigating Committee activity will drop off until after election, which means the investigation of profits on war contracts, provided by vociferous Committee General Warner, won't start until the end of the year, if then. Committee Chairman Mead's resignation last week to run for governor of New York meant that Sen. Harley Kilgore, Democrat of West Virginia, and Sen. James Tammell, Democrat of Delaware, are the two leading candidates, in that order, to head the committee. The other five majority members are up for re-election.

BRISTOL WILL RETURN—Re-election of GOP Owen Brewster last week, by a big majority, means the Maine Post-American-owned Senate will return to Congress next session with renewed vigor to push his two favorite aviation projects, an All American flag airline for all U.S. aviation operations, and an investigation of the Civil Aeronautics Board to determine whether any political influence has been a factor in new route awards.

SFAATZ LOOKS AHEAD—AAF Commanding General Spaatz is looking forward to retirement from military life. Although he has mentioned to friends that he is intrigued by the prospect of covering politics in his home state of Pennsylvania, he would probably look with interest on any opportunities in business or industry. His successor in AAF chief is slated to be General George Kenney now heading the U. S. military delegation to the United Nations.

OBITUARY OF AAF REVIEW—The official press handbook at Washington credited the demise of the official monthly service journal, AAF Review, to the company in its. Actually, the snapping of the publication was not "seconding so plain." Andrews Publishing Co. recently purchased Air Force with a 150,000 circulation guarantee, and the expectation that it would be published as the organ of the Air Force Association, AAF Review, however, came out immediately with the AAF Review, using Air Force's former Andrews seems probable that the AAF publication was competing with Air Force killed the Review.

TURNING THE OTHER CHEEK—Despite recent drastic criticism in reform and Federal acts to curtail drawbacks of air transportation, the airlines have

decided finally that not a single advertisement yet to be run in this year's \$500,000 ad program for the Air Transport Association will carry any note of commentary on the subject of air vs. surface transportation.

THE COMMITTEE FOR WORLD TRAVEL—Announcement of the formation of the Committee for World Travel, which elected L. Welch Pope as its chief, turns the spotlight on a group newly formed so far by the airlines. Support is being solicited, however, from other transportation and business interests, as well as non-commercial bodies such as the National Education Association, which has a member on the Board. Col. Sidney Fox Simpson, guiding light, says the Committee will "speak with authority to the government" for simplification of international travel regulations and red tape.

RADIO-ISOTOPES ARE TROUBLESOME—Airlines are worrying about whether troublesome customers. The average U. S. air traveler accustomed to the high standards of pre-war service, is already precipitating a succession of executive orders from airline presidents to new employees, urging more courteous and efficient service. Now comes a new type of business, these radioactive radio-isotopes from Oak Ridge, decayed by air exposure to medical instruments. Short lives of some of these products make air transportation impractical. But airlines acquiesce new regulations for handling. Air Transport Association's shippers research division has been headed the best person. After several weeks' work, this division has decided that passenger handling is easy.

LOW FLYING TO BRING PENALTIES—Although government agencies have been hearing down on careless pilots for several months, the number of cases of low flying continues to increase and you can expect CAA and CAE to crack down on serial hoodlums in unprecedented style. Pilots who have been known, firms and end-user life increasingly are probably the worst enemies of aviation, government agency point out, and various national and national aviation associations are to cooperate in the campaign against hoodlums' performance. ADPA explains to members that the low fliers will bring more federal regulation, will increase insurance costs, endanger approval of new airports by local authorities, and will increase air cost generally by retarding aviation production and sales.

Imagine Solar having Paul Revere's strange problem!



Paul Revere's fame got in the way of his reputation. Everybody knows about his horseback ride, but few remember him as America's foremost stainless-steel...the leader in his field.

While Solar hasn't finished any midnight alarms, our reputation is being overshadowed too. Like Paul, we're social enflamers—stainless steel fabricators. And we have quite a name as leading producers of stainless aircraft parts (exhaust systems for F-3E's,

B-57's, F-80 jets). In fact this pre-eminence in the aviation field has obscured Solar's extensive production for other industries*.

By remembering Solar as specialists in stainless steel fabrication serving many industries, you may well find the answer to your stainless steel problem...by taking advantage of Solar's exclusive Sol-A-Die process, backed by 15 years of experience with stainless. Call or write Solar today.



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September 28, 1945

Lockheed-Consolidated Merger Would Create New Aircraft Giant

Greatest fusion in aviation history would provide complete plane line from Little Dipper to XB-36 and largest sales in industry for 1946.

By WILLIAM KROGER

The greatest merger in aviation history, brought together the second and third largest producers of western aircraft, was being viewed out in New York and California last week between officials of Lockheed Aircraft Corp. and The Avco Corp., which owns controlling interest in Consolidated Vultee Aircraft Corp.

While no papers had been signed by mid-week, it was firmly established that Lockheed was seeking to acquire Consolidated, probably through a stock arrangement, in a deal that would all but take Avco completely out of the aviation business.

Lockheed Growth—Although the size of the companies involved make the proposed a mammoth, even more staggering is what status of Lockheed's move would mean to that company. The fact that it would be the biggest airplane company would be almost secondary in the line of planes it could offer from the smallest, the Little Dipper, to the largest, the XB-36 (now a product of Consolidated). In between would be a complete transport line: 12-place Saturn, 40-place Canby 248, 48- to 64-place Constellation, the 184-place Constitution and 380- to 390-place Constellation Model 37.

The personal plane line would be dropped, for the time being at least, to the Glenn T. Rogers 150 that is reserve. Lockheed has the Little Dipper, and Consolidated has an entire stable of personal planes under development at San Diego by Joe Gwinn, designer of the prewar Arrow.

If the merger were completed, Lockheed unknowingly would become the largest purveyor of aircraft to the Army and Navy. It

has its P-48 and other restricted designs for the Army; its P-4V Neptune patrol bomber and Constellation for the Navy. It would pick up from Consolidated the XB-36 and military transport XC-40, the P-43 jet fighter, and L-13 Hercules, all for the Army. Consolidated has many military contracts.

\$155,000,000 Sales—Expected production of Lockheed this year, according to a recent analysis issued by White, Weld & Co., is about \$148,800,000, while the same source estimates Consolidated's output at about \$140,000,000. The combination would put it far ahead of Douglas Aircraft, which the analysts expect to sell \$100,000,000 worth of planes this year.

Backing figures of the going equals in the merger are also tremendous for an aviation merger. \$218,000,000 for Lockheed and \$264,000,000 for Consolidated, at a total of \$482,000,000—nearly the greatest in the business and a respectable figure even in comparison to wartime amounts.

As part of the deal, it is understood, Lockheed would acquire the Consolidated plants at San Diego, Fort Worth and Wayne, Mich. Owners of the factory at Nashville is equivalent. It is here that Consolidated has been developing its new aviation activities and the business will continue as part of Avco.

Avco Withdraws—Avco, in withdrawing from aviation (as far as it knows, it will retain its large aircraft division which is manufacturing engines for the Piper Supercoaster) is reported to be preparing to extend its interests in other transportation and farm implements. Not included in the deal with Lockheed are the Consolidated

dated Vultee-owned, ACF-Trell Motors Co. divisions and its subsidiary Hall-Scott Motor Car Co. The given Avco a self-contained bus and truck producer. Its New Jersey company is in the agricultural implement business.

Presumably, Irving T. Haddock, chairman of Consolidated, will remain with Avco. A former General Motors executive, he has the requisite motor experience for Avco's new interests.

For some time Lockheed has been seeking to extend its interests through the merger in purchase of other aviation concerns. In the bargain, it acquired the Vega Aircraft company, and earlier that year it made overtures to Curtiss-Wright. Consolidated attained its present corporate identity through a series of mergers several years ago. As Consolidated Aircraft Corp. it was bought by Avco in 1943 and merged with Vultee Aero



NEW PRESSURE SUIT

Built for high altitude flying, this women's pressure suit of recent AAF design makes it possible for one, like the \$10,000 jet (AAF photo).

craft which previously had been bought by Army.

Two War Machines—Both Lockheed and Consolidated saw their present role in the war. In 1937, Lockheed sales were \$15,110,000. The next year it began building Hudson patrol bombers for the Army, and by 1939 its sales were about \$30,000,000. Consolidated averaged about \$10,000,000 on previous years.

Lockheed, in the year ending Dec. 31, 1943, earned \$14,485,250 on sales of \$47,405,100. Consolidated, for the year ending Nov. 30, 1943, had a profit of \$6,747,672 on sales of \$24,653,130. At the end of the year, Lockheed's earned surplus stood at \$27,200,150, and Consolidated, \$30,061,540. Estimated working capital of the companies is Lockheed, \$13,900,000; Consolidated, \$16,160,000, or a total working capital for the merged firm of \$30,060,000.

From the standpoint of working capital, the merged company would be smaller than the entire industry, exceeded only by United Aircraft and Curtiss-Wright.

Aircraft Show Spins Taken by 100 Firms

With contracts signed with 100 companies, associations and other segments of aviation for exhibits at the National Aircraft Show in Cleveland, Nov. 10-24, director Clyde Veneberg has announced that more than 100 models of the aircraft show has now been leased.

Outright block of space was taken by Cessnock Yulif Aircraft Corp., 2,640 sq. ft., with 2,300 sq. ft. of the area to be used as exhibit of the Stinson division. Next largest area was contracted by UAC, 1,440 sq. ft., with Reynolds 1,300 sq. ft.

Other large blocks of space have been taken by Douglas Aircraft, The Glenn L. Martin Co., Beech Aircraft, Bell Aircraft, Curtiss-Wright, Republic Aviation, Hercules Aviation, Boeing and Princeton.

A special drawing held at Washington, D. C., decided choice of space by subdividing in the five categories of general aircraft, helicopters, air transport, reconnaissance-cargo, and specialized—educational, scientific, training, etc.—in which category new will be added on a first-come-first-served basis.

Exhibitors of personal aircraft are motor gliders, helicopters, three (Gib, Princeton, Glendard), are biplanes, four, and engine accessories-suppliers, 30.

NACA Guided Missile Research Provides Basic Data for Services

Facilities at Moffett and Langley Fields and Cleveland exploring all phases of power, control, launching and aerodynamics of new type weapons.

Much of the success of the nation's guided missile program was made directly on the spent with which answers to fundamental problems are provided by the National Advisory Committee for Aeronautics, the government aeronautical research agency. Major function of NACA in the program is to provide basic research data for use in the design and operation of missiles developed by the Army and Navy.

Virtually all of NACA's current research program grants applications to guided missile development. Thousands and thousands aerodynamic research program at the Ames Aeronautical Laboratory, Dayton, Ohio. Cells include investigations of the shape of guided missile bodies, the type and configuration of control surfaces and the design of the mass supporting vehicle.

Flight Test Station—Research work on propulsion problems at the Aircraft Engine Research Laboratory, Cleveland, Ohio, will provide data for the selection of the various power plant types in a new missile design. Work of the Aeronautical Research Station, Langley Field, Virginia, is directed toward the study of the various factors influencing the choice of air or ground launching, launching systems including "dry" rockets and the stability problems associated with the development in flight of rocket assemblies.

Many basic questions remain to be solved before a guided missile production program can be initiated and considerable data is required before final choice of various combinations of purpose, use, propulsion, control method and guidance can be made in the light of a new missile design.

Missile Development—Responsibility for NACA studies of guided missile launching, control and tracking is centered in the Pilotless Aircraft Division, under the direction of Robert H. Oberth. This work is carried out in secrecy on an island along the Virginia coast. Missiles are fired out to the Patuxent Auxiliary Flight Test Station, administered as an adjunct of the Langley Laboratory, Hampton, Virginia, continue various launching tests, missile handling and ad-

vanced Flight Test Station, along the Virginia Coast, has already provided valuable data for the design of guidance and servo mechanisms.

Importance of NACA's role in the overall guided missile program is pointed out sharply by these ground level investigations.

Amalgamation—The design of aerodynamic, surface platforms and the selection of the number and function of various stages or fins on a guided missile body designed for supersonic speed.

Control—Investigation into the problems of guided missile stability and control and analysis of the various degrees of freedom of free-flight missiles, which of the various freedom should be controlled and by what method. For example, should guided missiles be controlled by thrust and by aerodynamic forces, or simply by aerodynamic forces?

Propulsion—Analysis of the application of various power systems to guided missiles and preparation of criteria for the selection of rocket, ramjet, turbojet, rocket or propeller power plants for a particular missile in question.

Launchers—Studies of the various factors influencing the choice of air or ground launching, launching systems including "dry" rockets and the stability problems associated with the development in flight of rocket assemblies.

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This division supervises the operation of various special research tunnels developed for studies of missiles at supersonic speeds. Five separate types have been designed to date: RM-1, RM-2 and RM-3 being stability and control tunnels and RM-2 and RM-4 compressing spiral and drag research tunnels.

These tunnels are rocket-propelled and contain instruments for relaying to automatic recording on the ground data on lift, drag, control surface movements, roll angles, airspeed and accelerations. In addition, their flight is tracked by radar and high-speed motion picture cameras.

Subsequent studies of these tunnels permit close analysis of these various factors and their mutual effect on each other.

Research Division—NACA's tunnels in rocket-powered air weapons began after Pearl Harbor. By direction of the Army and Navy, as well as the National Defense Research Council, NACA undertook a broad program of research work on guided missiles and conducted extensive aerodynamic tests on Army and Navy controlled bombs and missiles already during the early years of the war. One outstanding development of the program was the successful research control flight of a glider missile with a 12 ft. span through two polar 14 ft. span.

However, it was not denied early by the Aeronautical Board, which directed NACA during the war years, that investigation of problems concerning guided aircraft offered more immediate probability for the war effort.

Another factor was the result of a study that revealed that existing problems and even those which were too undeveloped to merit a guided missile research program. Research work on numerous NACA guided missile designs continued throughout the war on a small scale.

Fundamental problems which must be solved before an effective guided missile evaluation program can be undertaken include:

- (1) well-stabilized bodies
- (2) quick-acting servo-mechanisms (control equipment has too slow response for transient or supersonic speeds)
- (3) fuels with increased energy per unit volume.
- (4) greatly reduced fuel consumption of ramjet engines.
- (5) rocket "burn" which can be released following air release.



Research Model. NACA's RM-2 is used for aerodynamic drag investigations, transmitting data to the ground by telemetry. The fuel can be burned in air (NACA photo).

despite the stability of the missile.

- (6) suitable surfaces to control supersonic buffeting and vibration
- (7) stable supersonic airframe producing enough lift
- (8) increased range of effectiveness of guidance and target-seeking mechanisms
- (9) low velocity missile but ingredients to simplify transportation and handling problems in the field
- (10) effective relationships between various design elements

In addition to its comprehensive various control surfaces and guidance mechanisms, NACA's guided missile work has as a by-product research in fundamental aerodynamics. This is through its use of guided missiles as vehicles for testing the drag, lift and moments of small aircraft at high speeds.

Navy Centrifuge

A man-carrying centrifuge to test human reaction to forces equal to those of supersonic speeds will be built by the Navy at the Aircraft Modification Unit, Johnsville, Pa.

Resembling an amusement park "airplane," it will consist of a disk at the end of a long arm that revolves around a central shaft. Navy desires it as the

world's largest and the only centrifuge in the country capable of simulating actual flight patterns.

Administration Plans Industrial Defenses

A five-year program of industrial defense mobilization is being shaped by the Administration for presentation to the 80th Congress in January. Army-Navy Munitions Board is working with White House advisers on the plan, but a joint-use version of the old War Production Board is being considered as the administrative agency.

Speakers declare the project must be kept strictly under revision control. Object of it is to determine any agencies that the United States will stand behind its plans with force if necessary.

Members on day in the program is to write clauses into all contracts for sale or lease of surplus plants, forbidding owners and lessees from making any changes which would inhibit future war production for which the plants were designed, or to which they might be converted. The President, under his emergency war powers, can take action with such force as Congress may enact. Speakers expressed opinion no plants vital to a war effort have been released so far. Even if they have, the necessary re-construction must be begun.

The industry mobilization plan would include:

- (1) An administrative board and staff in Washington
- (2) Paper setup, coordinating all manufacturers in the great industrial assembly system developed in the late war
- (3) Stockpiling of strategic metals and other materials, including imports
- (4) Educational orders for all

PT-26 Sale

A third model sale of surplus aircraft PT-26 primary trainers will begin today at Municipal Airport, Fargo, N. D., with priority before having exclusive preference to buy war surplus.

One hundred fifty planes will be on the block at Fargo. A total of 300 PT-26s were built at Sioux Falls, S. D., by the Navy. War Assets Administration has also 100 PT-26s on sale at Great Falls, Mont.



Only time will tell how great a share of the world's transportation, both freight and passenger, will eventually be airborne. Much will depend on how well airlines will be able to compete with other forms of transportation. Truck and bus operators, for example, hope to speed schedules, improve payloads and cut costs through the use of engines built to take advantage of the extra available power in high octane gasoline. In the same way, improved aviation gasoline offers an opportunity for developing even more powerful and efficient straight engines which will help keep down operating costs.

Ethyl Corporation
 Chrysler Building
 New York City



Manufacturers of Ethyl fluid, used by all companies to improve the octane quality of aviation and motor gasoline.

SPECIAL AIR SERVICES

CHARTER NON-SCHEDULED INTRASTATE

McCarran Denounces Proposed CAB Economic Regulations

Author of Civil Aeronautics Act claims Board's proposals to shackle non-scheduled operators in contravention of Congressional intent.

By CHARLES L. ADAMS

One of the principal authors of the Civil Aeronautics Act, Sen. Pat McCarran (D., Nev.) has denounced CAB's proposed restrictive economic regulation of non-scheduled operators as a contravention of Congressional intent. His statement, read to Sen. Charles McNamara (D., Wash.), was received just prior to the deadline for comment on Amendment No. 2, Section 202.1 of CAB's Economic Regulations.

In adding his voice to the dissent against the proposed amendment, McCarran aligned himself with at least 60 members of airlines, industry groups, public agencies, Chambers of Commerce and private associations who opposed the restrict on in detail. Additionally, upwards of a thousand private citizens registered their protest in letters or telegrams, slipped from the Institute of Air Transportation's "Why Throttle Us" advertisements in metropolitan newspapers.

No Unsoundness—While attacks on the proposed regulation were heavily in the majority, sentiment fell considerably short of unanimity. Confused critics, as expected, either warmly endorsed the amendment or argued that its provisions should be made even more drastic. Several letters from individuals and at least one from a Chamber of Commerce also backed the proposal.

McCarran declared the Civil Aeronautics Act never contemplated the economic regulation of non-scheduled air line operators. He stated that fixed base operators were not represented at any of the hearings and that there is no reference in such carriers in the legislative history of the Act. The senator said the economic regulation promulgated by the

Board did not and cannot extend to private and contract air carriers as long as they are operating on a non-scheduled basis. He questioned whether such carriers engage in interstate, overseas or foreign commerce. The Board, McCarran asserted, was seeking through the proposed amendment to enlarge its activity without legislative authority.

Denack Replies—Charles Denack, acting CAB chairman, in replying to McCarran's letter, declared on behalf of the Board that neither the existing nor proposed regulations affecting non-scheduled air carriers were intended to extend to other than domestic carrier operations. He cited a CAB statement (AVIATION NEWS, July 8) which emphasized to the public that its regulations were not to be understood as applying to contract carriers.

"The frequently difficult problems of whether a carrier is a particular case must be regarded, on the facts relating to its operations, as a contract carrier presumably would have to be resolved with reference to decisions reached by the courts in related fields," Denack explained.

Another last-minute attack on the amendment came from the National Aviation Trades Association, which in some respects echoed the statements of McCarran. It is clear, the Association asserted, that the jurisdiction of CAB was intended by Congress to be limited, and is limited in the Act determined to regulate air carriers in interstate air transportation under the Economic Regulations are concerned. "Yet the proposed amendment tends to do all non-scheduled air carriers were completely exempted under the Board's jurisdiction."

Charge CAB "Captives"—Most of the formal comments on the amendment were couched in restrained language after hurried fixed base operators were assigned that a CAB "death sentence" was not imminent and that they would have further opportunity to present their case. However, there was considerable subterranean criticism, only occasionally manifested in the comments, on the source of the "restriction" for Amendment No. 2 and for reasons for the severe restrictions by the Board in the Page and Trade-Marine cases.

Some operators frankly viewed the amendment and the Page and Trade-Marine decision as indications that CAB was a "captive" of the certificated airlines. They expressed hope that the publicity attendant a few proposed new regulations would spotlight for the attention of the general public and Congress "CAB's role as guardian angel for well-enslaved scheduled airlines."

Presenting the other side of the case, United Air Lines contended that the proposed amendment failed to go far enough and called upon the Board to fortify, not weaken, its economic jurisdiction (Section 202.1 of the Economic

Blasts at Nonscheduled

Scrutinized complaints that all fixed base operators are not considering their activities in accordance with the best business which have been sent to CAB by individuals reporting industry experience with the non-scheduled airlines.

One man, who had previously engaged and ended a career as a captain of the non-scheduled "taxi" flight across severe regulation, declared his action had never advanced in view of the amendment he later received from a charter operator. The complaint, New York City to the Labor Place area and left him stranded without any transportation at the airport. He was finally released without penalty. He finally was forced to hire a automobile for about \$40 to get home.

Others have cited overcharges and delays to give refunds after providing equipment inferior to that originally specified. At least one certificated airline, TWA, has complained that a fixed base operator had charged him only confined with its own.

Regulations "to (that) the Civil Aeronautics Act may be applied to all common carrier operations as intended by Congress."

• **Civilian Work Aids**—All common carrier operations conducted without a certificate are prohibited by law under Section 431 of the Act, "and any regulation which attempts to change the law by permitting certain kinds of common carrier operations without a certificate is equivalent to the statute and void."

"Congress did not say that an air carrier may engage in common carrier operations without a certificate so long as they are unscheduled or so long as the service does not exceed ten round trips a month. It said that no air carrier shall engage in any common carrier operations without a certificate (that) Section 431 purports to permit what Congress has actually prohibited."

United indicated that Western Steamship Corp., unsuccessful applicant for a certificate in the Latin American route case, and Matamoras Navigation Co., unsuccessful applicant in the Hawaiian case, were enabled by the exemption to float the Board's will by starting unscheduled services.

• **Objections Voiced** — A representative of the Pittsburgh Chamber of Commerce, viewing other aspects of the problem, stated the Board is promulgating the proposed regulations as originally written.

"For months," the official declared, "I have interviewed young pilots who want to get in aviation for themselves. Most of them are entirely ignorant of the first principles of conducting a business aside from the knowledge of flying a plane, and it would be in their own interest to discourage

them by the imposition of the proposed regulations."

"After the Board has made its decision as to pending common carrier applications, there will probably be certificated service between practically every pair of cities in the country so there would be no need for inexperienced and untrained operators."

Riddle Aviation Asks Mail and Cargo Run

Riddle Aviation Co., Miami, now operating seven DC-4's in contract and charter flights between the U.S. and Canada and South America, has asked CAA for a certificate authorizing scheduled transportation of cargo and mail over seven domestic routes radiating from Miami to Rochester, N.Y.; Cleveland, Detroit, Chicago, New York City, Minneapolis and Los Angeles via intermediate points. The application will be heard in the air court case, Oct. 28.

Carrying both passengers and cargo, Riddle's transport activities have consisted principally of flights to Brazil where the company operates an aviation technical training school at Sao Paulo for the Brazilian government. The transport service was inaugurated in January of this year, and since July has been carried on by the newly-incorporated Riddle Airlines.

During April and May, Riddle reported 75,488 revenue passenger miles carrying 13,642 lbs. of cargo for \$1,844,624 revenue pound miles and for \$2,524,546 revenue passenger miles. Total revenue was \$42,472 and net loss \$4,534.

Other industry developments

• **Empire Airlines**, New York, re-

ports to put Boeing DC-400 Superliner in operation on its Buffalo-Toronto route. Company announcement was made after CAA issued a letter approved type certificate for the seven-engine passenger transport, specifying a maximum of 100 seats.

• **Trans Air Lines**, Houston, after a one-day suspension of service since this month, resumed flights on its scheduled schedule. TAA agreed to replace two DC-4's with Lockheed 441's, which took over month and had intended to sell the operations for 30 days in the meantime. The partial suspension of service was in answer to requests from the public.

• **Arnold Air Service**, Anchorage, Alaska, has been authorized to share with two G.A.s. The company, organized by Earl and Charles Arnold, makes about three roundtrips weekly, carrying cargo at 25 cents a pound and passengers at \$100. Cargo capacity of three tons and 100 passengers.

• **Caribbean Refrigerated Products Corp.**, Miami Beach, Fla., will transport fresh tropical fruits by plane and land to the U.S. and other markets down the coast.

• **Continental Airlines**, Inc., New York City, September 15, announced that J. J. Macdonald, president, is negotiating a selling of the airline to South American. Company is emphasizing cargo service and may discontinue passenger operations which were inaugurated May 28. Two passenger DC-4's and three cargo DC-4's are on hand. GE engine failure in Douglas, 11, president, David H. Green, vice president, Constance B. Green, secretary, and J. E. Mahan, treasurer and chairman of the board.

Trans-Luxury Crash In Bad Weather Kills 21

Trans-Luxury Airlines, New York, was involved in its second fatal accident in 13 days recently when a company DC-3 on route from New York to San Francisco crashed near Elko, Nev. CAA officials said the plane was attempting to land through a \$600-ft. ceiling, with wind speeds at 100 ft., and that the maximum ceiling for landing at the airport is 2,500 ft.

Twenty-one persons died in the accident, with only a 16-year-old child surviving. TLA's previous crash, in which the pilot and 33 passengers injured, was at the Molokai, Ill., airport (Aviation News, Sept. 2).

American Airlines System Uses *Flying Horsepower* For Trans-Atlantic Flagships!



Giant DC-4's are Fueled with Mobilgas Aircraft!



On commercial routes, the biggest American Airlines Mobilgas Aircraft—the seasonal aviation gasoline that gives Flying Horsepower.

Today it's a proven super power, and then some! More Victory, more improvements have been added that increase performance and economy benefits to commercial and private plane operators.

Flying Horsepower means the development of tomorrow's TUC Process, the Magna Blend Catalysts—the proven catalytic cracking process in the world.

Get this new super power for your planes—NEW Mobilgas Aircraft!

SOLARAY-CALCULON OIL CO. INC. and Mobilgas Magna Blend Process Co. General Petroleum Corp. of Calif.

NEW Mobilgas Aircraft Gives Flying Horsepower for All Planes!



INAUGURAL FLIGHT

Cable Airways became the first Miami-based non-scheduled airline to make 24-hour passenger flights when it flew seamen and guests to the transportation ceremonies of the new Puerto Ricos governor, Jesus T. Rivera, early this month. Five of the company's DC-3's also participated in the operation.



CONTINENTAL AIR LINES

orders a fleet of 15 new Convair-240's!

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8. Full-military cockpit—for added safety?
9. New high-lift wing?
10. You relax in snap-chair comfort!

All-Cargo Route Applications Mount As CAB Test Nears

Twelve or more operating carriers to participate in domestic all-cargo test hearings next month. Confirmed airlines intervene in opposition.

At least a dozen of the nation's most important all-cargo carriers now will participate in a hardy-confirmed CAB case which will determine whether a new network of all-cargo or cargo-mail routes will be established domestically to supplement the services provided by the regular airlines.

The arbitrators will go before the Board confident that they have stronger arguments for verification of nationwide-cargo operations than the feederline applicants had in convincing CAB that a widespread system of new local services should be authorized. The cargo carriers assert they have already developed enough business without certification to prove the vast potentialities of the new industry, whereas general public acceptance of purely local operations was still largely a matter of conjecture when the Board began to set up regional feederlines last March.

Applications of twelve active cargo carriers seeking certification authorizing scheduled operations have already been consolidated into the proceedings, and several more companies have made last-minute bids to participate in the case. Methods giving detailed information on the proposed operations are due Sept. 1, and the hearing has been set for Oct. 25. Officially listed as Docket #10 et al., the all-cargo case initially was composed entirely of applications from large trucklines which asked for certification as air carriers of cargo in 1942 and 1943. CAB did not receive applications from any of the presently-operating all-cargo airlines until late in 1944 when Globe Freight Airlines and Hooper Air Freight (now Airborne Cargo Lines) filed. They were followed a year later by American Air Express Corp.

A recent flood of applications has brought such well-known operators as Air Cargo Transport Corp., U. S. Airlines, Walla Air Service, Air Trans, Inc., Flamingo Air Service, Rock Airways, National Air Cargo Corp., Biddle Aviation Co., Lone Star Air Cargo Lines and Skyflight Airlines into the case. National Skyway Freight

Corp. (The Flying Tiger) and Standard Airlines (formerly Pacific Air Express) also may be included. Globe and National Air Transport recently withdrew.

The currently-certificated trucklines will present an almost solid front against authorization of scheduled all-cargo or cargo-mail routes. CAB has already permitted twelve airlines to intervene in the case. American, Swift, Chicago & Southern, Continental, Delta, Eastern, Mid-Continent, National, Northwest, TWA, United and Western.

These carriers will take the position that cargo operations can be handled most efficiently in conjunction with passenger service and that only a shortage of equipment—soon to disappear—has prevented them from developing fully the potential all-cargo market. Usually absent from the intervenors in PCA, which itself has filed for an extensive nationwide network of cargo-mail routes which would link up with its present system (AVIATION NEWS, Aug. 12).

Willis Puts C-54 On San Juan Run

Willis Air Service, New York, has further intensified cargo operations using certificated mail lines on the busy New York to Puerto Rico route by placing a C-54 freighter in service. The four-engine craft made its first flight from Teterboro, N. J., airport to

Airflight Record

Slack Airways, San Antonio, Tex., has broken the first air carrier's scheduled air service—intended to fly more than 1,000,000 revenue ton miles of airflight in a single month. While falling considerably below its goal of 2,000,000 revenue ton miles (AVIATION NEWS, Aug. 30), the carrier boosted its total load from 250,134 tons in July to 1,474,441 tons in August.

Slack began operations in March of this year. Slack has flown 6,025,134 tons in its ten C-47s (Charles Company). Offices for the carrier's widespread operations are located in New York, Boston, Philadelphia, Chicago, Detroit, Milwaukee, Los Angeles, San Francisco, Dallas, Fort Worth, Houston and San Diego, Tex.

San Juan tookoff early this month with a 16,000 lb. capacity payload of cut raw textile materials and leatherwork goods for processing by Puerto Rican labor.

The direct nonstop route over the Atlantic takes approximately seven hours, half the time required by other cargo operators who make the run via Miami with C-47s. Willis plans to fly 31,000-lb. loads of textiles and leatherwork goods monthly from the New York area to San Juan factories and return.

Meanwhile, the carrier is continuing its cargo shipments to Colombia (AVIATION NEWS, June 17) and recently carried 6000-lb. loads from Rochester, N. Y., to the South American country. Shipment to Bogota takes 12 hours by plane against three weeks by ship, and the cost by air is about 250 cents per head inch by sea. The C-47s used to carry loads 10 to 14 weeks early.



MOVE TO NEW BASE

Airborne Cargo Lines recently shifted their four DC-3s, and the others, from their temporary base at Baltimore Municipal Airport's National Guard hangar (above) to the 42-Airway Air Force Highway base at Millville, New Jersey. Just prior to the freighter's move flight in Millville, the plane's Hooper Air Freight markings were changed to reflect the carrier's new corporate name, Airborne Cargo Lines. (Airline photo)

Boundary Layer Control Offers Promise of More Efficient Planes

Douglas engineers apply principle to reduce drag and fuel consumption in new type transport design. NACA studying problem for new controls of supersonic aircraft.

New application of the principle of boundary layer control, which may net gains of 50% in cruising speed, 35% in fuel economy and 25% in useful load over current large transports have been developed by two Douglas Aircraft Co. engineers.

A. M. O. Smith, design research engineer, and H. E. Roberts, aerodynamic engineer, have incorporated their theories into preliminary designs for an all-son transport powered by six turbojets. This transport is designed to cruise at 600 mph at 30,000 ft. over a 1,500-mi. range carrying 125 passengers. It would require only 80% of the takeoff space used by conventionally designed transports of similar size.

NACA Studies Problem—The Douglas engineers' work on boundary layer control accords a recent trend of activity on a problem that has been attacked with varying degrees of intensity and little

success for nearly 50 yr. NACA is conducting intensive research on boundary layer control seeking answers to the problem of controlling expensive losses at subsonic speeds. In England, the Armstrong Whitworth 190 glider (AVIATION NEWS, June 24) used boundary layer control to preserve elevator control and increase lift and control on a tailless craft. Its effect as a directional control will soon be flight tested in the B-107 M-C-11 lightplane (AVIATION NEWS, July 1).

The boundary layer in the thin layer of air (63 to 96 in.) next to the surfaces of the aircraft, which moves at a speed slower (up to 34%) than the free air moving across the wing and fuselage. It amounts for half the total drag of a plane. By speeding boundary layer movement across aircraft surfaces and sucking it away, total drag may be reduced by as much as 50%.

The State in Airfield—The Douglas engineers proposed to suck the boundary layer from the aircraft surfaces through a series of slots located in the leading edges of the wing, vertical and horizontal stabilizers, and the forward section of the fuselage. By disposing of only half of the boundary layer through these slots they expect to achieve the results outlined in the foregoing paragraphs.

On the wing, the effect of the slots would be to create a laminar flow over a conventional airfoil by sucking the boundary layer along to the wing surface as far back as the slots. This would make it possible to combine the high lift quality of a conventional airfoil with the reduced drag resulting from laminar flow.

The Douglas engineers also propose to use the slots as intakes to provide a flow of low momentum air to the turboprops located in the wing and fuselage, thus solving the problems created by high velocity air intake in current jet installations.

Advantages Listed—Advantages of their design resulting from the dual use of the boundary layer would be:

1. Reduced takeoff run due to being airborne at slower speeds and better lift at a lower geometric angle.

2. Reduced climbing angle due to maximum lift co-efficient being obtained at a lower geometric angle. This on conventional wing designs.

3. Reduced overall weight due to use of turbojet engines instead of reciprocating engines, propellers, and associated accessories.

4. Higher speed due to reduced parasite drag from engine nacelles and leading edge air intakes.

5. Small control surfaces because removal of boundary layer would increase control effectiveness by 85%. Control near the stall is enhanced as a result, and control booster systems might be unnecessary.

6. Reduction of violent trim fluctuations in the transonic range, which may be an important factor in maintaining control at supersonic speeds as they pass through this range.

The Douglas engineers point out that their design is based on preliminary and incomplete data, but the risk of loss of application of boundary layer control offers sufficient incentive for continued research leading to eventual production of a transport along the lines suggested by their application.



Efficient Transport Design—Sketch sketches showing use of boundary layer control to improve performance of a six-engine jet transport equivalent in size to a Douglas C-78. Four jet engines utilizing boundary layer air intakes are located in the wings and two in the fuselage. Dotted lines indicate positions of slots to keep boundary layer air flowing over the airfoils. Cross hatched lines on right wing indicate position of porous used material to accomplish same purpose.

Dim View of Housing By Aircraft Industry

Manpower, financial and management are worst problems in tackling postwar housing problem.

Most of the aircraft industry is not enthusiastic over the proposal that it be given a large role in the construction of prefabricated housing. It is apparent in industry circles.

Three major objections are heard to the proposition that is being pushed by Federal Housing Administrator William Wyatt (AVIATION NEWS, Sept. 2). Not necessarily in the order of importance they are: manpower, financial, and management.

The industry does not have enough manpower to go deeply into a new program and maintain it to prevent production. It is launching a new recruiting campaign along the lines of the wartime drives would require time and money. The last item leads into the second objection.

Costs Ahead—Although FHA guarantees 90% of the cost of unskilled houses, the industry feels that it is in no position to take a 10% hit on a business with no definite long-term future. Tied to this is pessimism over maintenance and distribution set-ups which would cost considerably to establish. Management is an item that has not been fully taken into account in discussions to date on the subject. This is a matter related to the history of the industry and its wartime experience.

Before the war, the aircraft industry was relatively small, and its key men—particularly below the level of president and managers—shared their thinking and actions in the industry's run. This turned out to be heady during wartime when the industry was under pressure.

Management Needed—While really capable management in the aircraft industry is not scarce today, it is likewise not plentiful. Should the industry go into the housing program, it would have to spread its management thinner than would be efficient for production of aircraft.

Consequently, however, some persons interested in industrial preparedness speculate that it might be a good thing for the industry to go into housing purely because of the management losses. The remaining now is that eventually,



HOME OF THE CUHS:

Aerial photo of Piper Aircraft Corp. plant at Lock Haven, Pa. shows factory at right and Club Haven, company airport at left. Club J-2 transport roll out the long runway just assembly building at far right, while the shorter one beside it, soon to be extended in equal length, is the first assembly line for the three-place Super Cruisers. The flying field needs only a single runway since the field is created by hills and trends are high and constant.

should the program last long enough, new, capable management would have to be developed, as it was to a certain extent during the war.

This opinion is supplemented by a further one that in several years skilled management in the industry might drop below the safe and efficient level. With lower presen-

tation profile, there is bound to be a lower salary level as well as less incentive. Already a few top men have been lured away from the aircraft industry, the most extreme case being that of Ernest R. French, former president of Boeing. Although his salary at \$100,000-plus in 1945 topped the industry (AVIATION NEWS, Aug. 26), he



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continued to accept a vice-presidency with Ford Motor Co.
On top of these three major objectives to participation in the housing drive, the industry also feels that it has troubles enough meeting demands for its ordinary products, and points to the fact that deliveries already are far behind schedule.

Solar Shifts Emphasis To New Steel Items

Solar Aircraft Co., already making a boom in its non-aviation metal products, will now devote into the exploitation of stainless steel products, with some possibility that the company's name may be changed in accord with the new emphasis, it is understood in the firm's annual report.

An example of stainless steel fabrication subsidiaries by the company is in the field of dairy machinery, for which Solar has orders amounting to \$1,775,000 in a total backlog of \$9,098,100. Other products are: photographic development machinery, kitchen sinks, parts for beverage machines, freight car hoppers.

Acquires New Firm—Backbone of the business is still exhaust manifolds, in which field the company claims to be the leader. But as a hedge against an expected dwindling of this market, Solar last year acquired the precision cutting division of another company and moved the business to the Solar Des Moines plant. Turbine equipment also was installed in the San Diego factory.

Another sector for Solar's steel products is the Hubbard Casket Co. which was bought in November, 1945. This is the second instance of an aircraft company's making a market for its metals in the market business, the other being Hyman.

Solar's aircraft interests, in addition to its exhaust manifolds, lie in the field of jet production parts, and experimental work for the Army and Navy, presumably in the space or a related area. The Des Moines plant is producing parts for the jet engines being made by Allison, and is looking up the parts on the TG-100 engine.

May Change Name—With its highest interest in non-aviation products, however, Solar's president Edmund T. Price admits that a change in the corporate name may be forthcoming. "It is possible," he reported to stockholders, "that some suggestion may be offered which will satisfy all



BRITISH EXPORT ACTIVITY:

Three five-seat, high-wing, jet-propelled Vespene scout on a British airfield prior to delivery in Sweden, first of many bought by the Royal Swedish Air Force. One of Britain's latest fighter designs, Vespene has also been sold to France and Switzerland. (The Aeroplane photo)

requirements. However, until this appears, the tremendous job involved in changing a corporate name should be given careful consideration, together with the potential loss of goodwill inherent in the present nationally-known title."

Rotovanes Save Ton On Tandem Gear

Despite the use of tandem dual wheels in the landing gear of Lockheed's Constellation—the largest landing gear assembly yet made—a saving of more than a ton



Rotovane Turns: The tandem dual wheels of Lockheed's giant Constellation travel transport are protected upon landing by these bars, designed by R. P. Goodrich Co. Upon the force of the airstream, the wheels are set spinning at approximately 80% of the landing speed of the aircraft.

of weight has been achieved by the use of "rotovane" fins in the three sidewheels according to H. F. Schupp, engineer of R. P. Goodrich Co., leaders of the firm.

Because these vane rotovane wheels at approximately 80% of the landing speed at the plane, it is possible to use a smaller tire and lighter gear than would be otherwise required. As a result, the tires are large, 30-in. diameter for the right main wheels, and 44-in. diameter for the two nose wheels. The Constellation's landing gear is the first use of both tandem dual wheels and rotovane turns on a production basis. Both schemes heretofore have been tested experimentally on aircraft designed for other types of landing gear. The Constellation was engineered for tandem duals and rotovane turns.

The idea of pre-rotation of wheels to reduce drag has often been tried in the past with electric motors furnishing the power for the rotation. But rotovane turns enough to do the job would add considerable extra weight. Goodrich's plan, first brought forth several years ago and since then thoroughly tested, uses the airstream to supply the power.

The fins on the tires open at the bottom of each revolution of the wheel, pulled open by the forces of the airstream, and close back neatly flush with the sidewall at the top half of the revolution.

Goodrich Leases Plant

R. P. Goodrich Co. has leased a Government-owned building at Troy, Ohio, for its aircraft brake and wheel manufacturing division. The plant, which built gliders in war, adjoins Waco factory.



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PRIVATE FLYING

North American Navion Getting Service Test on 12,000 Mile Tour

Former Waco first plane on demonstration mission for aviation writers; lack of engine stresses production as type certification easier; controllable pitch propeller now included as standard equipment.

By ALEXANDER MCGUREY

At the half-way point in a 12,000 mile cross country demonstration tour, a four-place all-metal Navion personal plane reached Washington last week, with a good sized total of pilots in its favor.

Piloted by Betty Hayes, former Waco, and carrying three other North American Aviation Inc. representatives, the Navion's main mission is to give newspaper and magazine writers of the nation a first-hand experience of its performance and equipment. The tour also serves as a rugged service test of the new aircraft and demonstrating its ability to do the job it was designed for. In carry four people and their luggage with a reasonable amount of comfort, at cross country cruising speeds of around 180 mph.

► Stage Land—Since the touring Navion party left Palo Alto, Calif., July 18, Max Hayes and his companion, Ed Ryan, public relations representative; Raymond Mark, photographer, and Thomas Morgan, co-pilot and crew chief, have made stops at the following cities: Oakland, San Francisco, Portland, Ore.; Seattle, Spokane, Boise, Salt Lake City, Denver, Kansas City, Omaha, Aberdeen & D. Romack, N. D.; Chicago, Detroit, Milwaukee, Indianapolis, Dayton, Ohio, Newark, N. J., New York, Boston, Washington, Pa., Philadelphia and Washington.

They have also made a number of unscheduled stops such as the one when they went out of their way to fly back to Waco, Tex., Saturday Evening Post aviation writer, into the Navion for a flight at his home airport, Doylestown, Pa. Price, one of personal aviation's foremost critics, was successfully bribed in his opinion of the big room in the Navion, to be had by the expedient of riding the free seats on a little rail, with a travel down-to-back of about 6 in.

The touring Navion is fitted with a Hartzel variable pitch propeller, controllable by a single push-pull operation on the panel. Either this or the Aeromaster propeller will be provided as standard equipment, in place of the fixed pitch propeller used on the prototype but at no price increase to the customer. The price remains at \$4000 factory list, and will be pegged there accordingly, as far as the Navion buyers and North American. Washington representative Alex Mark, knows. The price does not include a California sales tax which need not be paid by out-of-state buyers. Mark estimates the plane will deliver at the east coast region for about \$4500.

► 100 Places Made—The plane on tour in the eighth Navion produced. Approximately 100 planes have been completely ready for an engine shortage which is causing North American the same headache that other lightplane manufacturers are having. Engines used on the Navion at the six-cylinder Continental opposed air-cooled

E-185 which turns up to 285 hp. at 2250 rpm. The engine is based on the same as the six-cylinder Continental E-185 which provides 180 hp. at 2450 rpm. and is the powerplant for the Navion's two principal competitors, the four-place Beech Model 35 Bonanza, and the four-place Piper Biplace.

From a standpoint of design, the Navion appears to be a little ahead. Approved type certification on the plane is anticipated very soon, and the company is already producing airplanes in anticipation of type approval, although none can be marketed, until this is received. The Bonanza is not far behind the Navion in this respect, but the Piper entry is not expected to go into production for another year.

Miss Hayes applied some data about their flight: best cross-country speed that far has been around 175 mph. ground speed attained in a 220 mile flight from Bismarck to St. Cloud, with benefit of tail wind. Probably the poorest ground speed was on the leg between Los Angeles and San Francisco, when they encountered a 40 mph headwind. However, the longest flight has been flown at around 5,000 ft. altitude. Besides standard instruments, this plane carries a two-way GM radio, turn and bank indicator, altimeter, and clock.

► \$1,500,000 Backlog—During last tour as a Waco, Miss Hayes was assigned most of the time at Love Field, Dallas, in ferrying work for ATC. She became a flight instructor at Beach, Tex., flying at Sheppard Field, and New York State, before becoming affiliated with North American's sales promotion department which headed her for the public relations tour. Currently North American has



Navion at Downtown Strip. North American's four-place all-metal Navion personal plane, which is being flown about the country on a demonstration tour by Betty Hayes, former Waco, is shown with the girl pilot at the controls. Mattelard Airport on Milwaukee's proximity of the airport to the main Milwaukee business district is indicated by the buildings in the background. (Milwaukee Journal photo.)

a backlog of \$7,500,000 in orders for the Juvon, which requests in about 1200 planes at the \$6500 figure. Considering that the plane is the company's first entry in the personal aircraft field, and that it was necessary to set up a dealer organization virtually "from scratch," and that the plane has not yet been built, this represents a very substantial indication of public approval for the plane.

Arrived for an early production of 30 planes a day, North American expects a year to increase that to 50 a day. To market its plane, the parent company is establishing "factory dealers," many of them former North American employees. Currently there are 37 of these located about the country. These companies do distribution, but are allowed the option of applying sub-dealers or handling their sales territories themselves, and greater need for additional sales develops. The company is conducting a factory school for the dealers at its factory plant, putting them through a one-week course in assembly, and maintenance of the new plane.

Elemental Test—First flight in the Juvon at Washington National Airport, showed it to be the easiest two-place to fly that ever has yet flown in, with a spacious baggage compartment, which should be a real advantage to a salesman or other type of business flyer. The plane is entered by stepping on a little auxiliary step just below the leading edge, then up on the wing, and through the wide opening left by the sliding canopy, and out the other.

The entrance, while not necessarily as probable about the greatest drawback to the plane, which is its requirement of power with the propeller. Two front seats

are separated by a tiny aisle which makes it possible to change seats in mid-air from front to back, or vice-versa, something not possible in any other two-place plane that we know of.

The nosewheel steers, while steering with the rudder pedals, but more easily than conventional landing gear planes, and landing is done with a hand brake, which operates both main wheel brakes together.

Flies Easily—In the air, the plane, like most of the newer personal aircraft, turns easily with the wheel control, while, unlike the rudder pedals, which are not needed for any normal flying. The wing has two aileron flaps on the leading edges near the wing roots, and these, together with the wing-top flaps, provide a wing which stalls at the roots first giving complete aileron control in the stall.

The plane is reasonably quiet, although "propeller-humors" for the cockpit, being in some sense from the engine. It is possible to carry on a conversation at only slightly above normal voice level.

The flight is an interesting experience in personal plane public relations, which seems to have paid considerable dividends already. It may well be the forerunner of many other such flights by other companies, who will take the double opportunity of showing and thoroughly "marketing" their new models.

Glider Results

A tabulation summarizing the 10th Annual National Soaring Contest, held recently at Haverhill, Mass., N. Y., shows that gliders competing in the show drew a combined total distance of 6,000 miles, spending 735 hours in the air, in a total of 346 sorties.

Flights, by 85 competing pilots. Cited as the most's most important achievement was the winning, for his third year, of the national soaring championship by John Robinson, Altadena, Calif., who made the longest flight, 40 miles to New Castle, Del. (100 miles) in a custom-built, two-place, single-engine airplane, and the altitude record of George E. Tobey, Boykron, Conn., who soared to more than 14,000 ft. in a two-place Schleicher SG-3-B.

Chipmunk Trainer Will Sell for \$7,500

De Havilland two-place craft designed to give instruction in primary through instrument ratings.

The De Havilland Chipmunk, all-metal, tandem 190 hp trainer is designed to provide flight instruction from primary training through advanced aerobatics and instrument flight training, its main objective, says De Havilland Aircraft of Canada Ltd., Montreal.

The airplane, previously featured in Aviation News (July 29) as a two-seater monoplane with fixed conventional landing gear and a sliding wing enclosure. Considering the fixed gear, the plane has an excellent performance range from 145 mph top speed to 137 mph cruise speed down to 40 mph. Landing speed with 30 degrees flap. Rate of climb is quoted at 1,000 ft./min. and maximum cruise at 160 miles. **Flies Two-Place Craft—**The plane accommodates two persons and 50 lbs. of baggage, or parachute. Seats have an adjustable throw of 5 in. range is not the length of the flyer's legs, and the entire instrument panel is provided.

Wingspan of the Chipmunk is 34 ft. 4 in., length is 35 ft. 2 in., and height 7 ft. 1 in. Fuelage has maximum weight of 25.2 gal. and maximum depth of 58 in. including canopy. Weightload is 103 lbs. per square foot. It will sell for \$7,500 in Canada.

Standard equipment includes: airspeed indicator, altimeter, turn and bank indicator, compass with correction disc holder, tachometer, oil pressure gauge, wiper holder, fuel gauges, dual ignition switches, cockpit fire extinguisher, engine fire extinguisher pressure-operated; safety harness, intercom unit with microphone and headset, Bendix wheel brakes.

Flies As Airplane—Conforming

to current military and civil training methods the plane is designed to train an airplane pilot. Without fear the Chipmunk's glide path is very flat giving a good flying range if necessary, while flat flaps produce a steep glide, resembling approaches in modern aircraft, and making possible a 300 ft. climb over a 30 ft. obstacle in 500 yds.

Designed as a successor to the de Havilland Tiger Moth, primary trainer of Canada and Great Britain in World War II, the Chipmunk's all-metal stressed skin construction throughout. Landing gear uses rubber shock absorbers, of a type used successfully on the Mustang.

CAB Asks Comment On Service Flight Test

The Civil Aeronautics Board has invited industry comment before Oct. 1, on a proposal of CAA that all new model airplanes shall undergo accelerated service flight tests before they are eligible for type or airworthiness certificates. The proposal would require a seven-hour flight test of 100 hours on all aircraft except transports. These would have to fly 150 hours. The tests would be in addition to the other flight tests now required.

The proposal may come up for discussion at a meeting of Personal Aircraft Council engineers personnel in Washington, Sept. 11-12. While some of the personal aircraft companies have voluntarily conducted accelerated service tests on their new planes (notably Cessna and Vultee with the Skymaster Verser 300) it is not likely that the additional test now involved in the new proposal will be welcomed by the industry, which has been critical of over-engineering CAA test and requirements and increased costs in production.

With the present CAA system there is some prospect that an applicant would not get approved type certificate until it had flown several times 150 hours. Why the new model should then be required to make a special service flight test by a government institution is a question industry engineers are bringing up. Admitting that there are advantages in a service flight test which will eliminate some of the "buggy" found in every new airplane it is argued that the test should be organized with the manufacturers rather than secondary because of the extra red tape involved.

Briefing For Private Flying

INTERNATIONAL AIR SHOW—Among personnel and smaller planes at a display at the recent International Air Show conducted by NAA of Canada at Toronto were: Aerovox, Bellanca Grange 8, Cessna 140, Ercoupe, Luscombe Silverst, Mustang Verser 150, Swift, and Cessna 170. Also on display were: Bellanca Skyracer, Piper Cub of Canada, de Havilland Chipmunk and Fox Moth, Nieuport Norcross and the multi-engine de Havilland Dove. Despite the fact that the show was held during the same time that the National Air Races were going on at Cleveland, the Canadian show had more American personal airplanes on view than the Cleveland event. This may be traced largely to the \$500 charge which the Air Races placed on personal airplane exhibitors, and to the attending of the personal plane exhibition in Cleveland, which completely rubbed what could well have been one of the most popular features of the boundary show.

WILL DRILLER BUYS EROUPE—Donald D. May, of Troop, Fla., head of the Mac Toolless concern, will drillers, is reportedly authorized to buy one or several Ercoupe's for use in aerial inspection and drilling sites. The 26-horsepower Ercoupe was the second airplane purchased in the nation to use the new CFT aluminum structure plan, which provides insurance coverage in the Ercoupe arrangement (Aviation News, July 29). May paid \$1,185 down, and will make monthly payments of \$210.00 on the \$2,575 plane, for a year, when the plane will be his.

FLY FLIGHT TRAINING—A series of eight articles in the Milwaukee Journal by Michael Hanna, now a reporter, formerly AAF aviator, in his experience in learning to fly under the GI bill of rights, is seen as a considerable stimulus to additional enrollments of flight trainees in the Milwaukee area. The articles tell the aviator that the various steps he must go through in learning to fly, and what he must do to obtain flight ratings under the GI bill.

MEADOWS FLY COPS—Three flying veterans of World War II will be placed in the flying police to man the Glenn L-5 Nelson type plane produced by the Mineral State Highway Patrol, from War Assets Administration. Trooper Hugh Wallace, of the Kansas City station, whose AAF experience included a year of flying the Biplane in the CBR program for AAF and was often used to be released, will be the plane for anti-air, and will coordinate its flights with movement of surface vehicles of the state patrol, by two-way radio. The plane is getting a new two-tone blue coat of paint, and will have the aid of the state of Missouri, and the state Highway patrol emblem. It is believed by the pilot that the plane will be the first plane owned and regularly used by state patrol in a wilderness state.

NEW FREQUENCIES—CAA communication stations after Jan. 1, will guard the 121.1 megacycle frequency for air-to-ground communications for private aircraft, while control towers will guard 123.3 megacycles for air-to-ground control tower communication. The CAA will continue to guard the presently used frequencies 121.5 and 121.6 megacycles until further notice. The 121.1 and 123.3 frequencies have been listed by Federal Communications Commission for use by private aircraft, as a replacement of the very high frequencies used FCC in coordinating allocations in the VHF band in accordance with recommendations of the radio Technical Committee for Aeronautics. They call for setting aside frequencies 123.1 and 123.3 for private aircraft; reserve air-to-ground, and 122.5 through 122.8 for private aircraft to control towers, or to ground. CAA does not expect to guard these last named frequencies however unless and until FCC makes the allocations definite.

AIRPORTS TOUR—Residents of the greater St. Louis area are guests at the Greater St. Louis Aviation Operations Association in a series of Sunday open house tours in September, to the eight airports in the area. Flights scheduled for visits include: Murren, Wright, St. Louis, Leakeville, Parkville, North St. Louis, St. Charles and Lambert-St. Louis. Static and flying exhibits of new military planes, and air shows were scheduled at the various flights on an effort to bring about more interest in flying and to create a greater interest in the aviation industry.



BENDIX THREE-PLACE

First picture of a new three-place airplane, published recently in an advertisement by the Bendix Aviation Corp., above, is identified by Deane Warner as a reasonably accurate sketch of the new 108 hp, three-place Bendix personal plane which has been flight tested under power in the Midwest area since the first of the year.

SALE SURPLUS AIRCRAFT ENGINES

100 UNUSED PRATT & WHITNEY R-1830-75 AIRCRAFT ENGINES LOCATED
DETROIT, MICHIGAN, OFFERED FOR SALE
PRICE FIXED AT \$400 EACH, F.O.B., LOCATION, FOR QUICK DISPOSAL

This engine was built for the B-24D heavy bomber. The C. A. A. has certified it for use with 86 octane fuel at the maximum ratings specified for the engine regularly used in DC3 series airplanes, but the R-1830-75 engine has never actually been certified for use in any commercial airplane.

The engine has a military rating of 1369 horsepower at 2600 R.P.M., which is 150 more horsepower at take-off than the engine regularly used in DC3 airplanes. The dry weight is about 1555 pounds, approximately 96 pounds more than the regular DC3 engine. Compared with the regular DC3 engine, it has the same impeller ratio, propeller shaft ratio, propeller shaft spline and rotation.

The WAA warrants the accuracy of the foregoing description but does not warrant, either expressed or implied, condition or the suitability of this property for any particular use. No claims for variations from warranted descriptions will be recognized unless made in writing within 15 days after the delivery to the purchaser at the storage point.

PRIORITY TIME TABLE

- 1st Priority: Federal Government Agencies—October 2, 1946
 - 2nd Priority: Veterans of World War II—October 3, 1946 through October 17, 1946
 - 3rd Priority: R.F.C. for resale to small business—October 18, 1946
 - 4th Priority: State and Local Governments—October 19, 1946
- These engines will be available for sale to the general public (separately grouped) after October 19, 1946.

Those who desire to exercise their preference must present a valid Veterans' Preference Certificate prior to purchase. (Consult the nearest WAA Regional or District Office for information as to where Veterans' Certification may be obtained.)

HOW TO BUY

Checks made payable to Treasurer of United States must accompany order. Mail order to War Assets Administration, Office of Aircraft Disposal, 425 Second Street, N.W., Washington 25, D. C.

WAR ASSETS ADMINISTRATION

ADDRESS ALL INQUIRIES TO: OFFICE OF AIRCRAFT DISPOSAL, WAR ASSETS ADMINISTRATION, 425 SECOND STREET, N.W., WASHINGTON 25, D. C.

TRANSPORT

CAB Challenged by Brayton On Grandfather Clause Certificate

St. Louis fixed base operator will carry fight to courts if Board denies request made eight years after time limit for application expired.

By MERLIN MCKEE

A new issue was added to CAB's complicated unscheduled problem last week when Raytheon Flying Service of Lambert-St. Louis Field asked the Board for a grandfather certificate, nearly eight years after the time limit for such applications supposedly had expired.

If Raytheon can substantiate its claim that the Board's unscheduled exemption order violates it to request and receive such a certificate as a remedy, the way may be opened to some 20 or 30 other fixed base air carriers of the large group threatened by more restrictive economic regulation.

Frederic Earl Fudge—William L. Schubert, Washington attorney for the St. Louis company, promises to take the case to the courts if necessary to establish the validity of his client's claim. He said two or three other unscheduled operators were considering filing similar requests, and estimated that more than a score more could qualify for grandfather certificates. The Board has on its files nearly 16 such applications, virtually all from unscheduled carriers who submitted them soon after the

Civil Aeronautics Act became law in 1938. CAB has not acted on them because of its exemption of unscheduled carriers from establishment requirements.

Scheduled air carriers, who for the most part started certificated operations under the grandfather exemption, may be expected to watch the case closely along with unscheduled operators for its possible effect on the entire air transport picture.

Nonetheless, Except—The "grandfather" clause in the Civil Aeronautics Act directs the issuance of certificates of convenience and necessity to air carriers qualifying they applied thereto within 120 days after the Act was signed, and fulfilled certain other requirements.

The Act was approved June 23, 1938, but on Oct. 16—117 days later and three days before expiration of the 120-day time limit for grandfather applications—the Board issued an order exempting unscheduled carriers from economic regulation.

Brayton asserts that this action deprived it from the requirement

of filing an application within the four months period. It now requests a certificate under the grandfather section [801 (c) (1)] applicable operation as a non-scheduled common carrier by air of passengers and property between points and places in the United States.

Question of Law—Schubert considers the question one of law, rather than of Board interpretation of the act. On the other side is the view of some operators in aviation law that the Board's action was an exemption from revenue duties but gave unscheduled carriers no extension of privilege. They cite the section (118) under which the order was issued, permitting the Board to "exempt from the requirements of this title any person, person or property, as applicable only to the duties and the rights of applicants.

Brayton Flying Service is incorporated in St. Louis and has as officers Clyde H. Brayton, president, Donald S. Sullivan, vice-president, Frank Williams, secretary, and Donald Davidson, treasurer.

The application states that it has been operating unscheduled common carrier air services since a time prior to May 14, 1938, date from which, until the effective date of the Act, applicants must have been in continuous operation in quality for grandfather certificates.

Schubert described the firm as operating a "hot and dense" service to various sections of the country and said it also conducts a CAA-approved aircraft engine school, owns a hangar, and is surplus property agent for War Assets Administration. In addition it is distributor for light planes, engines and propellers.



FIRST PICTURE OF THE NEW CIVIL AERONAUTICS BOARD:

All five members of the Civil Aeronautics Board (including the latest appointee, James M. Lando, chairman, and Clarence M. Tamm, vice-chairman, Lando, Harlow Branch and Josh Lee

met at a portion of the Raytheon route case. Seated on the bench from left to right are: Thomas Oswald Ryan, vice-chairman, Lando, Harlow Branch and Josh Lee



UNITED 4-ENGINE CARGO PLANES IN SERVICE

Informer photos of one of two all-cargo Douglas DC-4s put in service yesterday by United Air Lines on its transcontinental routes show cargo bins with flexible gates to reduce loading procedures and a 4 ft. electric winch, capable of lifting 2,000 lb. at 20 ft. per min., used in handling heavy loads. Usually hinged to the corner of the 55 x 55 in. main cargo door, the winch also can be swung to other points on the plane.

to exercise those freedoms on such routes as may be provided to any contracting state."

To answer these questions in the affirmative, CAB declared, would mean that this executive agreement would override the statutory provisions of the Civil Aeronautics Act. "There it no reason why the privileges granted by the agreement should not be exercised pursuant to the public interest of the various contracting states as that public interest is not understood by the respective aeronautical authorities of the states."

CAB Examiner Asks Consolidation of Routes

Certificate amendments to permit route consolidations by direct transcontinental carriers—American Airlines, United Air Lines and TWA—have been recommended by CAB Examiner Herbert K. Bryan. The amendments, with certain operational restrictions, would consolidate: 1. American's AM 6 and 38 into a single route; 2. TWA's AM 7, 37, 44, 61 and 47 into one route; and 3. United's AM 1 and 11 into one route. The airline had cited administrative and clerical economies which could be achieved by the consolidations and pointed to the greater efficiency in operating four-engine equipment that could be realized after cutting

route passenger points, now preventing longer flights, on eliminated.

Air Passenger Total Will Double in '46

78 percent increase over 1945 in revenue passenger miles reported for first six months of this year.

Close to twice as many passengers will fly by the nation's scheduled airlines in 1946 compared to 1945 if the carriers do as much as maintain their present monthly traffic figures for the remainder of the year.

The picture now shaping up promises to show at least 15,699,899 revenue passengers flown in the 12-month period, against 8,623,668 last year and just over 14,000,000 from the beginning of 1939 until Pearl Harbor. In revenue passenger miles reported, the airlines have reported a 78.68 percent increase in the first six months of 1946 compared with the corresponding period last year.

Traffic Still Climbing—Proof that the figures which have established new flight records every month this year have not yet leveled off is found in preliminary reports for July showing revenue passengers numbering about 3,200,000, up al-

most \$8,000 from June. Eastern Air Lines has already released August totals which at a new all-time monthly high of more than 148,000 revenue passengers for that carrier.

While revenue passenger miles climbed from 3,463,183,949 in the first six months of 1945 to 3,441,480,618 during the first half of this year, mail ton miles showed the effect of the war's end by sagging 45.46 percent, from 32,689,847 ton miles to 17,551,574 ton miles over the same period. Express and freight ton miles rose 13.87 over the first half of 1945, but the revenue passenger load factor dropped from an average of 87.39 to 84.35 and to 82.22 falling.

Leading Lines Listed—Leading air airlines from the standpoint of revenue passenger miles flown in the first half of 1946, with comparison to the corresponding 1945 period in parentheses, are: American, 305,386,186 (337,475,441); United, 487,374,547 (294,341,047); TWA, 194,759,858 (133,133,448); Eastern, 342,591,754 (289,269,968); PCA, 146,506,110 (78,778,887); and Northwest, 153,583,157 (81,715,649).

While Hawaiian reported the highest load factor—83.93—the large carriers, except for PCA, were close behind. Northwest had 87.63, Eastern (first five months) 87.48, TWA 86.08, American 84.44, United 85.46 and PCA 77.81.

Plan Traffic Relief For New York Area

Relief for congestion of air traffic going into the New York area definitely was in prospect in time for winter operations as CAA and airline officials met in Washington last week to go over final details of plans for new curvy facilities along the eastern seaboard.

These include radio range installations by CAA for two additional airports between New York and Philadelphia, New York and Boston, and Washington and Philadelphia. There now are two between New York and Philadelphia and one of each between the other pairs of points.

Most beneficial result will be that through traffic will be able to bypass New York, eliminating some of the need for additional lanes in holding procedures over the New York area.

Airline officials predicted the program, while it will not solve the congestion problem entirely, will go far toward relieving a situation results of which extend far back into the airways system.

A survey to determine what can be done in the Chicago area on the same problem is in progress.

Empire Opens Service

Opening of Empire Air Lines' AM 78 feeder route with service to Maho Falls, Portville, Burley, Clonding, Tross, Lewiston-Clarkston, Painesville, Muskegon and Covert d'Almeida, Idaho, Oshawa, Baker La Grande and Pendleton, Oregon.



FOR TWA EXECUTIVES:

Its wartime interior replaced by the seats, desks and berths of an executive transport, the Boeing B-27 will carry TWA officials on business trips about the world. The plane was converted by Boeing and now seats nine to twelve passengers, with ample cargo and baggage space. It also delivered to the line recently.

and Walla Walla and Spokane, Wash., is now scheduled for Sept. 16, according to the Post Office Department. Service to Twin Falls, Ida., will be inaugurated later.

Howe Changes Mind On Air-Rail Divorce

Further continuation of possible Canadian space in reversal of previous policy, new course is chosen.

Almost unthinkingly with announcement that the Canadian Air Transport Board had formed a number of subsidiary routes of Canadian Pacific Air Lines into the northern mining regions, Reconstruction Minister C. D. Howe stated in Parliament at Ottawa that he had changed his mind as to divorcing airlines from ownership and operation by railroads.

In 1944 Howe announced at Ottawa that a year after the end of the European war airline and railway ownership and management would be separated (Aviation News, May 1, 1944). Recently he stated that the date for this divorce had been postponed to

May 31, 1947, but that he personally favored continuation of the present system.

Food Authority—C. D. Howe is the final licensing authority for Canada on airlines. While his office at Ottawa does not mean immediate change of government policy, it is fairly certain that changes in Canadian aviation legislation will coincide with his views. Trans-Canada Air Lines will continue to operate as part of the government-owned Canadian National Railways, giving a transcontinental air service throughout Canada as well as operating all international routes from Canada. Canadian Pacific Air Lines will continue to be owned by the privately-owned Canadian Pacific Railway, and operate the bulk of the feeder routes throughout Canada.

In explanation of his change in attitude, Howe said that at the time he gave the government's disavowal policy to Parliament in 1944 the public was not getting the service to which he believed it was entitled, and he believed he had the support of the public.

Relations between the government and CPA were far from

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Fig. 2138—50 GPM
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- Turbine, Centrifugal and Rotary Type Nozzle Pumps
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- Standard Heavy Pumping Units with Air Operation and Manual
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USED AIRPLANE ENGINES

For sale, used airplane engines, including Continental, Pratt & Whitney, Lycoming, and others. Engines are in excellent condition and are available at a discount. Call for more information.

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Available immediately

Senior Engineer or Representative with design, engineering, and construction experience. Must have a minimum of 10 years experience in the field of aircraft design and construction. Salary and benefits commensurate with experience.

SA-232, ANTIATION NEWS

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McDONNELL AIRCRAFT CORP. of St. Louis

Has openings for SENIOR AERODYNAMICISTS for work on piloted aircraft. Three years' experience in Aerodynamics required. Experience and training in Supersonic Aerodynamics desired but not essential.

Write giving full details to

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AIRCRAFT PARTS, COMPONENTS ASSEMBLIES, & AIRFRAMES

- 1 Engine, P&W 8-1020 & 8-2025
- 2 Engines, Wright R-3350
- 3 Engines, D-1, & P-1
- 4 Engines, S&W, J&W, G-4, and W-4
- 5 Engines, P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8, P-9, P-10, P-11, P-12, P-13, P-14, P-15, P-16, P-17, P-18, P-19, P-20, P-21, P-22, P-23, P-24, P-25, P-26, P-27, P-28, P-29, P-30, P-31, P-32, P-33, P-34, P-35, P-36, P-37, P-38, P-39, P-40, P-41, P-42, P-43, P-44, P-45, P-46, P-47, P-48, P-49, P-50, P-51, P-52, P-53, P-54, P-55, P-56, P-57, P-58, P-59, P-60, P-61, P-62, P-63, P-64, P-65, P-66, P-67, P-68, P-69, P-70, P-71, P-72, P-73, P-74, P-75, P-76, P-77, P-78, P-79, P-80, P-81, P-82, P-83, P-84, P-85, P-86, P-87, P-88, P-89, P-90, P-91, P-92, P-93, P-94, P-95, P-96, P-97, P-98, P-99, P-100, P-101, P-102, P-103, P-104, P-105, P-106, P-107, P-108, P-109, P-110, P-111, P-112, P-113, P-114, P-115, P-116, P-117, P-118, P-119, P-120, P-121, P-122, P-123, P-124, P-125, P-126, P-127, P-128, P-129, P-130, P-131, P-132, P-133, P-134, P-135, P-136, P-137, P-138, P-139, P-140, P-141, P-142, P-143, P-144, P-145, P-146, P-147, P-148, P-149, P-150, P-151, P-152, P-153, P-154, P-155, P-156, 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A Case History of Airline Traffic

BY REASONS OF OBSCURE REASONS, point-to-point air traffic figures are seldom saved by the individual airlines, so that the industry and public are informed usually of the airlines' tremendous monthly growth only in round millions of planes miles, passenger miles, or other terms which are confusing and rather meaningless in the layman, except to convey a vague sense of expansion.

A glimpse into a specific segment of this tremendous development of air transportation is afforded, however, by examining statistics recently filed with CAB by PCA-Capitol Airlines. PCA is desperately in need of an order by the Civil Aeronautics Board to permit it to eliminate a landing at Detroit or through Washington-Chicago flights, which would save 48 miles distance and about an hour's time. The company is not permitted to operate any regular roundtrip service between these points.

The traffic figures presented show for the first time in recent point-to-point statistics the growth of an individual route between a pair of important cities separated by 600 miles, despite progressively better competition between four air carriers. The evidence is all the more striking when it is related that no local or intermediate passengers are counted.

History of PCA through traffic is shown in the table below, with a notable increase noted early in 1966 when the 36 passenger Douglas were added:

PCA Washington-Chicago Passengers

February, 1966	156
March	159
April	145
May	174
June	156
July	159
August	159
September	210
October	226
November	145
December	140
January, 1966	145
February	221
March	226
April	230
May	240 (31 days)
June	240 (30 days)
July	250

This means that in May and June through PCA traffic rose on this one route with 321 passengers a day, and 171 in July as the fact of constantly increasing competition is indicated:

Daily Flights Between Washington and Chicago					
	AA	TWA	UAL	TOTAL	
January, 1966	8	5	2	15	
February	8	5	2	15	
March	8	5	2	15	
April	8	5	2	15	
May	8	5	2	15	
June	10	5	2	17	
July	10	5	2	17	

As PCA publicized, the volume of its through traffic increased from 242 passengers in January 1966, when there were only 35 competing daily schedules, to 1710 in July, when its 14 daily trips competed with 35

others. PCA further believes that "it is particularly significant that the volume of 321 passengers per day carried by the applicant in May 1966 was maintained in June 1966 even though American instituted two daily nonstop Washington-Chicago round trips with DC-4 equipment about June 1." In July, PCA's 440 seats daily represented 47.4 percent of the total available by all airlines between the two cities.

These statistics, therefore, based on seats available and current load factors indicate, according to responsible airline executives, that in July there were nearly 50,000 airline passengers between these other cities.

These statistics are striking proof of the revolutionary change the nation's air transport system is undergoing in attempting to meet an ever increasing demand by the public which was unmet of a few years ago, despite what were then considered over-cautious provisions of a post-war era of airline expansion. They show, too, incidentally, why some have chosen to add to their through services more rapidly than local runs, although there is increasing evidence available which makes it strong a point in the possibilities of short leg traffic.

Mediocre Limousine Service

CONSUMER SERVICE was again in jeopardy at airport city transportation. Months ago a fleet of buses from a second transportation company was leased to supplement the outdated limousine service, but firms were kept at limousine rates. More recently, however, limousine cars have been reduced from the dollar level to 50c.

Now the city transit authority has determined upon a new system, but has lost from the airport to the heart of the city at the regular city fare of 10c. These air routes probably will not exceed that of the limousines by more than 10 min., and most of us are accustomed to waiting that long for a limousine dispatcher to make up his mind in some mysterious way that it is time to start.

We hope other municipal governments will emulate Chicago in giving its airport the benefits of mass transportation service. The only ground transportation available to the entire public generally is limousine service in Washington, however, even cars are prohibited from pickup at the airport, across the line in Virginia.

Limousine rates generally are excessive. Types are ad hoc. While air travel is universal, despite these drawbacks, destinations are arbitrarily limited and frequently a traveler must pay by his own destination because "regulations don't permit it, so we can't do it." We don't make the regulation, war!" Limousine service has deteriorated nationally with introduction of 36 and 40-passenger airlines.

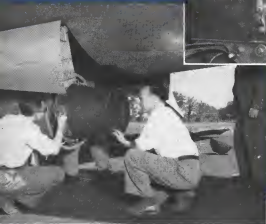
As the airlines serve a continually more representative segment of the public, the number of travelers willing to pay up with mediocre limousine service at premium rates will drop off. If the transportation companies themselves refuse to meet progress, they must have competition, such as the Chicago Transit Authority intends to make out.

ROBERT H. WOOD



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Flying TEST CELL

● Keeping tabs on a red-hot hurricane best describes the activities of these G-E engineers. They're checking an instrument panel in the pressurized chamber of a B-29, G-E's Flying Laboratory. The instruments are connected to various parts of a gas turbine, the TG-180, which has been installed in a bomb bay of the giant plane. In this manner, accurate records can be kept of actual flight performance of this G-E development, and adjustments made without danger to personnel.

Center of this development work is the G-E Flight-test Division which was recently dedicated at Schenectady. Besides the big hangar, there are offices for engineers, a workshop where parts are made, and space for development work on all types of airborne equipment. Here, work begun under the impetus of war years has not slackened on equipment useful in commercial aviation. Here, too, problems connected with new planes of all types can be studied and equipment flight tested. Remember, General Electric is working on electric power systems (a-c and d-c), aircraft instruments, gas turbines, and many other devices. Perhaps we have the answers to your electrical problems. Our engineers will be glad to discuss them with you. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



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